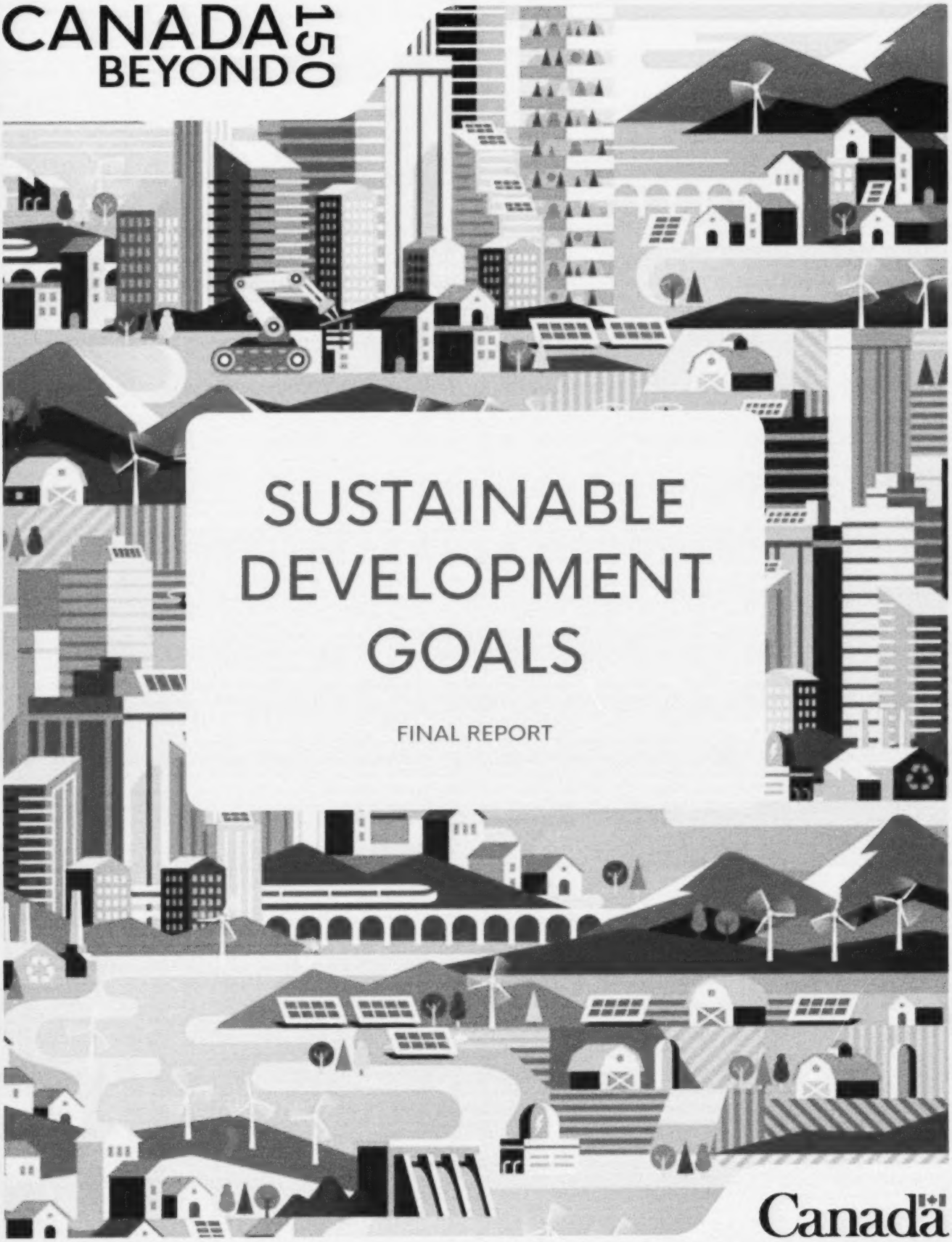
CANADA 150
BEYOND



SUSTAINABLE DEVELOPMENT GOALS

FINAL REPORT

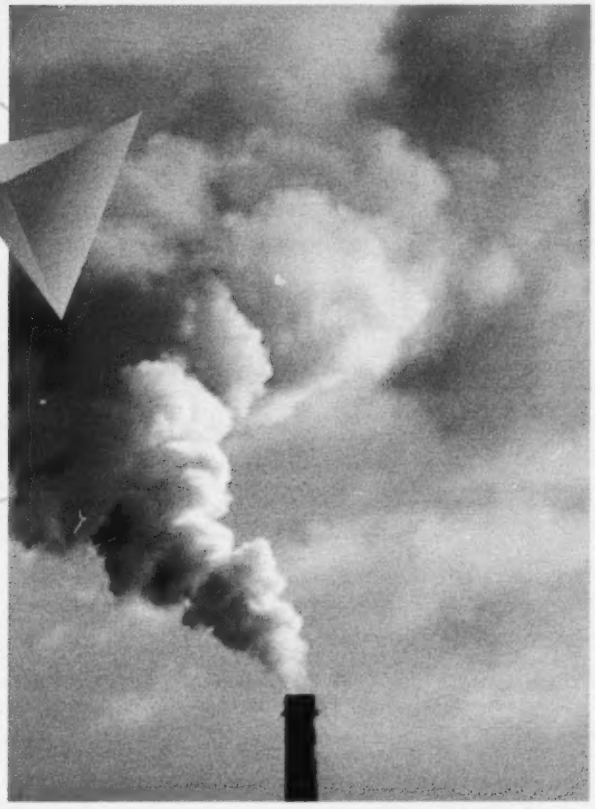
Canada

SUSTAINABLE DEVELOPMENT GOALS

This document does not represent an official policy position of the Government of Canada. Instead, it records the work of a sub-group of new public servants who participated in Canada Beyond 150, a professional development program co-championed by the Privy Council Office and Policy Horizons Canada. The program was designed to support the development of new public servants, and to drive a culture change within the public service. The participants were invited to use foresight, design thinking and engagement tools to explore policy issues relating to diversity and inclusion.

INTRODUCTION

Consider Canada's record on implementing the United Nations' Sustainable Development Goals (SDGs) under the 2030 Agenda. According to the non-profit foundation Bertelsmann Stiftung, Canada currently ranks 11th out of 34 OECD countries on the United Nations' Sustainable Development Goals Index. While it ranks highly on several indicators, Canada is weak on greenhouse gas emissions, carbon dioxide emissions from energy production, primary energy intensity, and domestic material consumption, at 29.2 tons per capita in 2015. Meeting Canada's commitments in these areas will take significant breakthroughs.



Imagine how Canada could look in 2030 if we made more focused efforts toward Canada's commitments under the United Nations' Sustainable Development Goals. Capitalism could drive the world towards a low carbon economy. Consumer expectations and demand for transparency could incite corporations to shift their focus to sustainable products and practices. The sharing economy could be on the rise, causing a marked decrease in consumerism and national carbon footprints.

This is just one scenario imagined by the SDGs team of the Canada Beyond 150 (CB150) project. Developing these scenarios required the team to consider many questions: What are commonly held assumptions about sustainable development over the next 5-10 years? Which low-probability, high-impact events could shape our future? And what is the federal government's role in guiding sustainable development in Canada? The team had one task: propose a policy intervention that the federal government could adopt to help Canada meet its SDGs commitments.

Our proposed intervention? The Government of Canada should revisit the concept of ecolabelling by adopting a framework with a sustainability grade structure. This would help consumers quickly make informed decisions about goods based on their environmental impact, help improve the sustainability footprint of supply chain actors, and strengthen public policies on the implementation of the SDGs over the long term. Grade classification would be based on a points system, where points are earned by meeting sustainability criteria, and would apply to all products. Producers would collect sustainable data by using emerging technologies like blockchain, sensors, the Internet of Things, smart meters, and artificial intelligence.

Our proposed intervention could be one of those breakthroughs. It could use Canadian technological expertise, particularly in life cycle tracking, to align with the Government of Canada's Clean Growth goals. Its $1 billion investment in strategic investments would support the clean technology sector through the Innovation and Skills Plan. The proposed intervention could help place Canada as a global SDGs leader.

BACKGROUND AND FOCUS

The SDGs team began by identifying signs of change and innovation (weak signals) that may have a significant long-term (10 to 15 years) impact on the implementation of the SDGs. The team covered different topics, including environmental impact bonds, microgrids, additive manufacturing, alternative modes of transportation, food sharing, and the psychology of being in nature. Given the broad range of these SDGs, the team focused on to two goals: sustainable cities and communities (Goal 11), and sustainable consumption and production (Goal 12). The team scanned, collected weak signals, and identified commonly held assumptions related to the SDGs such as:

- reducing environmental impacts will have negative effects on economic growth;
- consumption will increase substantially per capita in developing countries and most likely decline in developed countries; and
- sustainable development must fit into the current economic system.

They also examined specific assumptions about ecolabelling:

- collecting supply chain data will be expensive and time-consuming;
- consumers will always choose price over other factors when purchasing; and
- producers will be reluctant to share their supply chain information.

The team consulted with experts on sustainable development, including academics, regulators, and representatives from the private sector. Using their weak signals and knowledge acquired from experts, the team identified insights, which describe how weak signals could lead to significant structural changes. For example:

What If Individuals/Corporations Took Care of Their Own Waste: With the increasing cost of virgin materials, many companies now see waste as an economic opportunity, rather than a consequence. Technology is helping find new ways to transform waste into valuable products (biorefining, biofuels, automated material extraction), which help localised recycling. At the same time, citizens are increasingly keen on recycling, composting, and other waste reduction initiatives (like the zero waste initiative).

The team identified high-impact change drivers behind its insights, which could shape the outcome of Canada's sustainable development path. The change drivers included:

1. The rise of the regenerative (circular) economy: the economy is developing a built-in tendency to recycle.
2. A corporate shift towards sustainability: businesses are moving toward more sustainable practices.
3. Big data and the rise of a fully transparent society: more information is available to make informed decisions.
4. The rise of mass customization of products and services: consumers expect customised products and services.

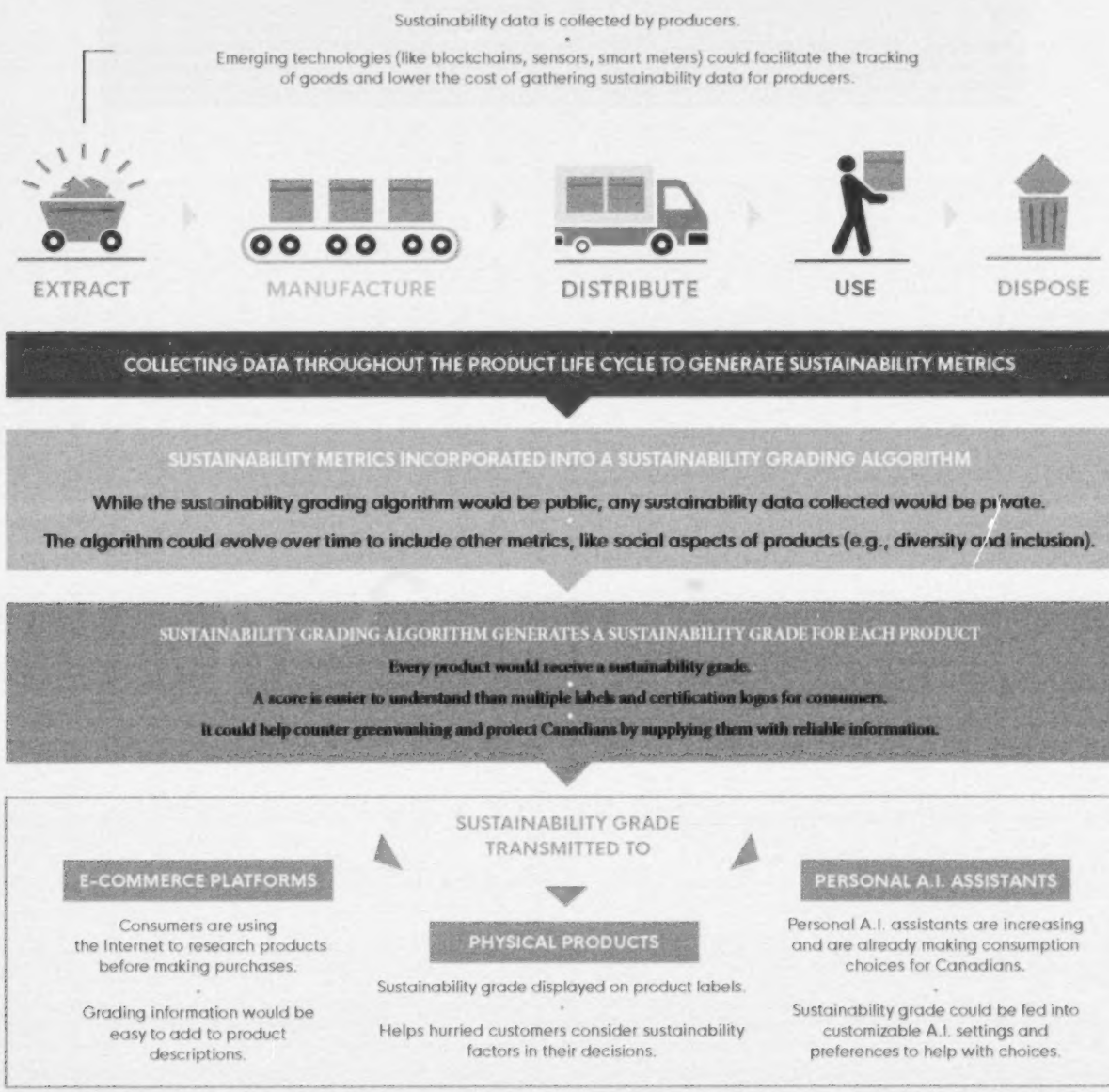
OUR INTERVENTION

Our proposal is to create a system to grade the sustainability of products and services, using data pulled from different points in the supply chain (see Figure 1). New technologies, such as blockchains and the Internet of Things, would allow better tracking and description of products and services. These new technologies could help automate the collection of sustainability data, lowering the cost of collection. Products would get ecological grades through a points-based system: they would get points for meeting certain criteria such as recyclability or minimal packaging. This grading system would allow both consumers and producers to rate the sustainability quotient of products.

BLOCKCHAINS

Blockchain is more than the technology behind crypto-currencies like bitcoins. It is a record-keeping mechanism that can safely store digital records of transactions and track tangible assets (like houses or cars) and intangible assets (like intellectual property). It uses a decentralised public or private peer-to-peer network, where each participant keeps a copy of all digital records linked to a particular asset. No participant can modify a record retroactively. Blockchains are already used to track the origins of products and improve traceability across complex supply chains. For example, they help companies reduce investigation time in cases of foodborne illnesses.

Figure 1: Transparent Supply Chain


Sustainability data is collected by producers.
Emerging technologies (like blockchains, sensors, smart meters) could facilitate the tracking of goods and lower the cost of gathering sustainability data for producers.
EXTRACT
MANUFACTURE
DISTRIBUTE
USE
DISPOSE
COLLECTING DATA THROUGHOUT THE PRODUCT LIFE CYCLE TO GENERATE SUSTAINABILITY METRICS
SUSTAINABILITY METRICS INCORPORATED INTO A SUSTAINABILITY GRADING ALGORITHM
While the sustainability grading algorithm would be public, any sustainability data collected would be private.
The algorithm could evolve over time to include other metrics, like social aspects of products (e.g., diversity and inclusion).
SUSTAINABILITY GRADING ALGORITHM GENERATES A SUSTAINABILITY GRADE FOR EACH PRODUCT
Every product would receive a sustainability grade.
A score is easier to understand than multiple labels and certification logos for consumers.
It could help counter greenwashing and protect Canadians by supplying them with reliable information.
SUSTAINABILITY GRADE TRANSMITTED TO
E-COMMERCE PLATFORMS
Consumers are using the Internet to research products before making purchases.
Grading information would be easy to add to product descriptions.
PHYSICAL PRODUCTS
Sustainability grade displayed on product labels.
Helps hurried customers consider sustainability factors in their decisions.
PERSONAL A.I. ASSISTANTS
Personal A.I. assistants are increasing and are already making consumption choices for Canadians.
Sustainability grade could be fed into customizable A.I. settings and preferences to help with choices.

Labels that display the grades would help consumers make informed decisions about goods based on environmental impacts. (see Figure 2)

Figure 2: Example of Sustainability Grading Stamp on Product Label

Current eco-labelling systems in Canada are limited. Examples include the ECOLOGO label launched by the Government of Canada and now run privately by Underwriters Laboratories. A number of other labelling programs have surfaced, causing confusion among consumers. There is no clear method for consumers to make choices based on sustainability as well as other factors like cost. No private system is likely to become widespread without firm national standards. Additionally, unless labeling is mandatory, unsustainable products are unlikely to be labelled at all.

WHY THIS MATTERS

Consumers incorporate sustainability into their behaviour in a general sense, but have difficulty turning these intentions into specific actions, like choosing what to consume. A more robust and digestible way to access sustainability information could help consumers make choices that better reflect the consumption preferences of Canadians. Better economic outcomes could follow as businesses gain better data on efficiency, energy use, and use circular economies within their production processes.

THE ROLE OF THE FEDERAL GOVERNMENT

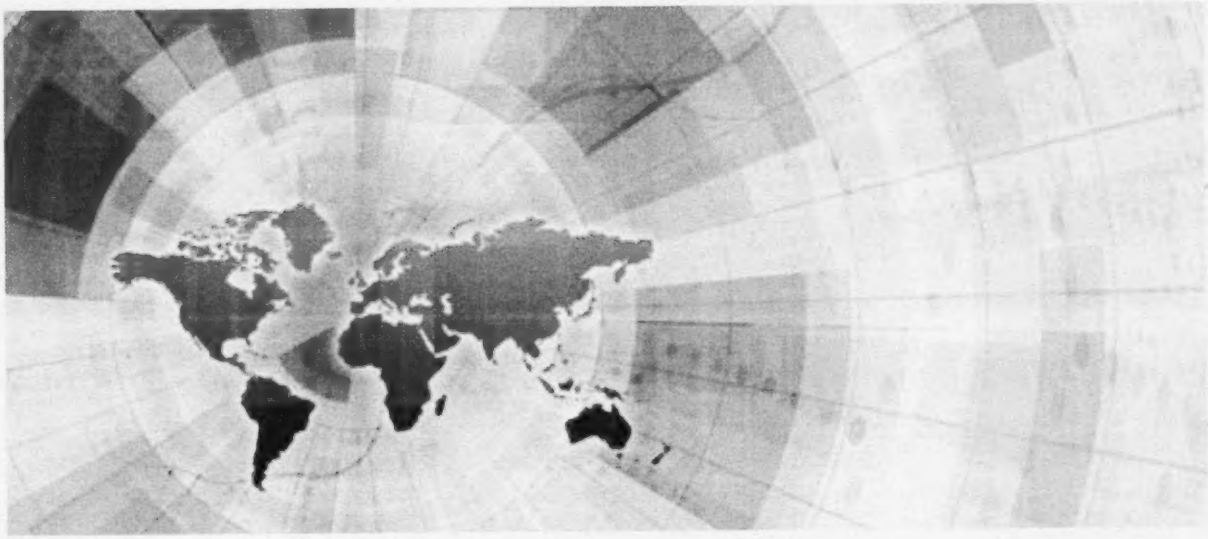
The federal government would play a key role in creating an effective ecolabelling system. Its role would be to co-create:

- an integrated system to collect data on the environmental impact and sustainability of products throughout their life cycle;
- an algorithm to translate data from the supply chain and grade it according to metrics agreed upon by stakeholders and experts; and
- effective ways to communicate sustainability scores to consumers.

This approach would support the integrity of the rating system and ensure that it is objective and trusted by consumers. The federal government is in an ideal position to initiate and lead this effort; as a provincial/territorial initiative could result in various sub-national programs across the country leading to inconsistent standards, potential interprovincial trade barriers, and higher costs for businesses.

Under this proposal, the federal government would collaborate with provincial and territorial governments, international trade partners and organizations, as well as industry and the public, to address the full range of associated policy challenges. These challenges include how national standards would be set and implemented; what kind of transparency can exist or be expected with intellectual property issues; how this would be implemented across provinces and territories; and how a greener supply chain might increase prices of goods and services.

Down the line, federal leadership and action could encourage the development of international standards to create a consistent set of global ecolabels. Working with international partners may additionally help ease international trade concerns and find solutions for countries that lack digital infrastructure. The proposed intervention would help Canada and other partnering nations to meet sustainable consumption and production objectives under UN SDG Goal 12.



INTERVENTION TIMELINE WITH DESIRED OUTCOMES

Below is the phased approach for our policy intervention:

> IMMEDIATE

- Stakeholder consultation
- Proof of concept
- Measure the environmental footprint (LCA) of collecting data with blockchain
- Develop a Canadian lifecycle inventory database

> INTERMEDIATE

- Launch Sustainability Awareness Pilot Initiative

> LONGER-TERM

- Based on Pilot Results, develop final grading algorithm
- Export algorithm to other jurisdictions

> FINAL PRODUCT

- Launch National Sustainability Grading System

IMMEDIATE (UNDER 5 YEARS)

The immediate term would involve consultations with national, regional and international stakeholders on a sustainability grading system. This would help identify specific concerns to address. This stage would also involve testing the proof of concept, including:

- find producer volunteers to test the data collection across each stage of their products' life cycle;
- test the tracking and monitoring technology's (e.g. smart sensors and meters, blockchains) capacity to connect every part of a product's value chain; and
- develop an algorithm and supporting information system to generate the sustainability grade, using the information collected and monitored with smart sensors and meters as well as blockchain.

Desired outcomes:

- Agreement from F/P/T and industry partners to support the idea of a national sustainability grading system
- Successful testing of the proof of concept stage

INTERMEDIATE (5-10 YEARS)

This term could involve expanding the initiative to new products. This would help test the robustness of the sustainability metrics and methodologies used in the proof of concept stage. This stage would also involve testing the best way to communicate sustainability grades to consumers, which include gamification and using behavioral insights.

Desired outcomes: To meet the short-term objectives under SDG Goal 12, including:

- 12.6 - Encourage companies to adopt sustainable practices and to integrate sustainability information into their reporting cycle.
- 12.8 - Ensure that everyone has relevant information and awareness regarding sustainable development and lifestyles in harmony with nature.

LONG-TERM (OVER 10 YEARS)

The final system would be developed over the longer-term. This stage may involve exporting the intellectual property (e.g., algorithm) to other jurisdictions.

Desired outcomes: To meet the long-term objectives under SDG Goal 12, including:

- 12.4 - Manage chemicals and wastes in an environmentally responsible way throughout their life cycle.
- 12.5 - Substantially reduce waste through prevention, reduction, recycling and reuse.

CONCLUSION

Delivering on Canada's commitment to the sustainable development goals requires a number of policy changes, bold vision and comprehensive solutions. This paper highlights one approach the federal government could take to foster sustainable production and consumption practices. While ecolabelling is not a new idea, new technologies could help automate the collection of sustainability data throughout the supply chain, to then assign a sustainability grade. However, to drive a significant breakthrough, a new ecolabelling program needs to be comprehensive and include all products within a product category. Developing an effective ecolabelling framework would be challenging on many levels - logistical, administrative, technological, and economic. If Canada Beyond 150 has taught us anything, it's that the future is happening now. It is normal to see an increase of enabling technologies as a daily part of the society of the future. The Government of Canada can develop policies that will proactively take advantage of these technologies through forward initiatives and plans, and deliver on its commitments to the United Nations' Sustainable Development Goals.

ABOUT THE SDG TEAM

Diversity was built into our group from the onset. We represent nine departments and agencies, with half of our members working outside the National Capital Region; and an equal gender split. This diversity has been invaluable in exploring the emerging challenges and opportunities for Canada with respect to the SDGs. It also brought challenges in completing the project. The key elements of the team's learning journey are included below.

Our enabler was a key member of the team, guiding us throughout this project. As a first-time enabler, he also experienced his own learning journey, starting with how best to facilitate the group.

LEARNING TO WORK IN REMOTE TEAMS

The CB150 experience has increased our ability to work more effectively in a team of remote members. For example, developing new social media skills helped connect a team member with other public servants, allowing him to explore beyond his four-person office. SDG members learned new collaborative tools (e.g., GCconnex, WebEx, and Nureva), which helped overcome challenges related to physical location differences and schedules. Our experience also highlighted the struggles of telework, as in-person conferences were often the most productive. How and when to use telework and other technology, and understanding their limitations was a valuable lesson learned for future projects.

ENGAGING WITH EXTERNAL STAKEHOLDERS

One of the most rewarding aspects of Canada Beyond 150 was the opportunity to engage with external stakeholders through interviews, conferences, in-person visits to organizations (such as the Forks in Winnipeg, which has adopted a zero-waste goal). Every interaction brought new awareness and insight to the SDG group. Stakeholders gave their time freely and helped increase our network, even within the federal government.

BRINGING CANADA BEYOND 150 TO OUR WORKPLACES

Two of the SDG members introduced a scanning club as an easy, accessible way of incorporating elements of the foresight method into their policy development process with their agency. One of these scan clubs examines articles about new technologies, which are then assembled into a "tree" during special quarterly meetings. This tree is used to map and identify new trends and ideas that feed into the planning of the Agency's technology development programs. The other club looks for weak signals that could have a high impact on the northern economy. For example, this club examined whether 3D printing has the potential to help solve the North's housing crisis.

SUSTAINABLE DEVELOPMENT GOALS

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